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Mothers' ability to identify nonverbal expressions of four affects in their own children.

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MOTHERS' ABILITY TO IDENTIFY NONVERBAL EXPRESSIONS OF FOUR AFFECTS IN THEIR OWN CHILDREN

A Thesis Presented

By

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CHAPTER I

INTRODUCTION

There is now much evidence showing that nonverbal behavior provides valuable information about an individual's internal state. Ekman and Friesen (1969) have shown that, without training, adults can, and do, make accurate inferences about emotions, attitudes, interpersonal roles, and severity of pathology by observing nonverbal behavior. For young children, whose verbal abilities are not yet greatly developed, it would seem reasonable that nonverbal expression may be an even more valuable tool in communicating information to those around them (Odom and Lemond, 1972). Accurate parental decoding of the child's nonverbal behavior, particularly nonverbal expressions of affect, may be especially important in helping the child to interpret, label, and differentiate his or her own emotional experiences, the emotional expressions of others, and the stimuli that elicit them. Sensitivity to the child's nonverbal expressions may affect the outcome of specific interactions between parent and child, as well as the ongoing character of the parent-child relationship, by providing the parent with useful information about the child's emotional state. In turn, recognition of the child's emotional state provides a basis for the empathic understanding of the child. Since parental empathy is an important factor in promoting a sense of well-being and health in children (Carek, 1972; Ornstein, 1976; Saarni, 1978), the ability of parents to decode nonverbal expressions of affect in their children thus seems to be an impor-

tant area of research for understanding the emotional development of children.

Studies of Nonverbal Interaction of Adults and Children

Infant studies. Surprisingly, there have been relatively few studies of the nonverbal interaction of parents and their young children. Most of the literature has looked at parents and infants. These studies have examined the social signalling aspect of emotional expression (Emde, 1978), the ethological study of mother-infant interaction systems (Tronick and Adamson, 1979), and the influence of the caregiver and social world in supplying the basis for cognitive evaluation of emotional experience and differentiation of self from others (Lewis and Brooks, 1978). The literature suggests that the response the caregiver gives to the infant's expressive signals provides a framework for the infant and caregiver to understand that these signals are socially useful and meaningful. The "reading" (decoding) of the infant's behavior for cues as to how to respond appropriately is seen as especially important in this reciprocal feedback system (Saarni, 1978).

Effects of children's encoding on adults. Another line of research which suggests the importance of nonverbal behavior in parent-child interaction, and has implications for the ability of parents to be empathic with children, has looked at the effects of encoded behavior of children on adult responses to them. Whereas the infant research generally emphasizes the importance of parental (usually maternal) decoding of behavior and the reciprocal nature of the interaction between

infant and caregiver, this line of research suggests that adult responding to children, and empathic responding in particular, is influenced by the adult's perception of affective responses of the child to the adult. Several studies (using verbal and nonverbal variations in encoded behavior) suggest that adult responses to children tend to reciprocate the perceived affective content of the child's message to the adult; that is, adults seemed to simply respond with affect matching that of the child and were unable to take the role of the child in understanding the situation (Cantor, Wood, and Gelfand, 1977; Teyber, Messé, and Stollak, 1977). In another study, Bates (1976) again found a reciprocity of affective responses of adult to child. In addition, children serving as confederates in the study were themselves affected by the adult's responses to their encoded behavior in the direction of the experimental condition (children encoding high "nonverbal cues of positivity" felt more positively about the adult subjects while children encoding low nonverbal cues of positivity felt less positively about adult subjects). Empathic responses, or attempts at empathy, were not reported.

These studies did not involve parents and their own children, a factor which might reasonably be expected to affect the quality of the adult response to the child. Parents, being more invested in the relationship with their own children, might also be more motivated to understand the child's situation from the child's perspective. The studies cited above also did not call for adults to make specific affective judgments about, or interpretations of, the child's state

(subjects instead were asked to respond more generally in terms of liking or not liking the child). Since empathic responding involves the "experiencing of emotion similar to that of another person as a consequence of perceiving feeling in the other person" (Fesbach and Roe, 1968, emphasis added), situations calling for adults to make specific judgments about what a child feels might better elicit empathic responding. In any case, the relative ability of parents to accurately decode nonverbal expressions of emotions in their own children has not been adequately examined in previous research and will be discussed below as a goal of the present research.

Encoding of specific affects by children. Several researchers have focused on the encoding of specific affects by young children. In a study of the perception and production of facial expressions of emotion, Odom and Lemond (1972) found that the less accurately produced expressions appeared to be those judged most socially undesirable (with the exception of anger). Buck (1975) examined encoding in children and found that, when asked to role play specific affects (happy, sad, surprise, fear, and anger) children seemed to be significantly more accurate in encoding the affect happy than fear and anger. In a review of the acquisition of nonverbal communication, Mayo and LaFrance (1978) reported that the capacity to reproduce different facial expressions varies developmentally. Happy and sad were produced by all age groups studied while children showed improvement in the ability to produce expressions of anger and surprise up to the age of ten or eleven. Expressions of fear however, were not produced reliably even by the older

children reported in the review (third and fifth graders). They go on to note that although developmental improvement in producing facial expressions is found in some studies, others (notably Odom and Lemond, 1972) show no great improvement beyond nursery school age.

These findings suggest the possibility that the nonverbal encoding of specific affects may be differentially inhibited as part of the socialization process. If this is the case, we might expect adults to have relative difficulty in the decoding of particular affects. Again, since the ability of adults to decode specific affects in children has been relatively unstudied in previous research, the present study will examine this question.

Parent-child interaction: relative use of channels and effects of incongruous communication. Another area of research in the nonverbal communication of children examines the differential use of verbal-nonverbal channels by children and adults and the effects of incongruity in these channels. In a series of studies investigating these questions, Bugental and colleagues have looked at parents and their own children in situations involving incongruity across channels and at groups of families containing "disturbed" vs. "normal" children. In studies of conflicting information across channels (verbal content, vocal intonation, and visual), it is generally found that adults make more use of visual channels than children in the perception of evaluative meaning (Bugental, Kaswan, Love, & Fox, 1970; Bugental, Love, & Gianetto, 1971; Bugental, Love, Kaswan & April, 1971; Bugental & Love, 1972; Bugental & Love, 1975); that is, adults tend to give greatest

weight to facial expressions in decoding conflicting messages. In studies of "disturbed" vs. "normal" children and their families, parents of disturbed children in dysfunctional families were found to give more conflicting messages than parents of "normal" children.

These studies indicate the relative importance of the visual channel for parents in decoding behavior in incongruous situations. (This again suggests the importance of examining parental ability in decoding nonverbal facial expressions of emotion.) In addition, the occurrence of greater incongruity in parental messages to disturbed children perhaps suggests that such incongruity plays a role in developing, or develops as a consequence of, dysfunctional behavior in children. Mehrabian (1972) hypothesized that the decoding of inconsistent messages of liking contributes to psychopathology. He finds that, for adults, "double-binding" (the inability to respond accurately to messages due to their conflicting nature across channels) occurs less often than differential communication of attitudes. In an experiment involving parents and their disturbed or normal teenagers, it was found that parents in families with disturbed teenagers did not display greater incongruity across channels compared to normal families (they did, however, give more negative verbal feedback to their children). Mehrabian also makes the point that children seem to exhibit greater immediacy in communication (that is, quicker and more revealing encoded responses) than adults and that the implicit (nonverbal) channels may be used to convey more negative attitudes as development proceeds because verbal channels may be suppressed by socialization prac-

tices. The accurate decoding of non-verbal negative affect by parents thus becomes more important.

Although the above studies are somewhat conflicting in terms of their implications for the development of double-binding, psychopathology, or dysfunction as a result of incongruous communication across channels, they do seem to point to the signficant contribution of nonverbal communication to patterns of adaptive and maladaptive development in children. Childrens' nonverbal expressions give valuable and revealing information about how they feel. Adults, in relying on nonverbal messages, can make significant errors in responding. Davitz (1964) finds that adults seem to be fairly consistent in types of errors made in reacting to vocal expressions of emotion and that these errors can lead to distortions in behavior. Perhaps these distortions take the form of, or lead to, incongruous parental messages to children. The inability of parents to accurately read (decode) nonverbal affective cues of children might then play a role in the development of dysfunctional behavior.

Decoding childrens' nonverbal expressions. There are a few studies in which parents are directly compared with non-parents in decoding children's behavior. Hall, Rosenthal, Archer, DiMatteo, and Rogers (1974) in studies employing the Profile of Nonverbal Sensitivity (PONS) (an audio-visual test of nonverbal decoding ability), found that parents were more accurate than non-parents in decoding the expressions of child stimulus figures. (In these studies, the children were unrelated to the parent subjects.) The differences found were due to dif-

ferences between mothers and non-mothers (and not fathers and non-fathers) and they hypothesized that direct parental experience with preverbal children might enhance sensitivity to nonverbal cues. In a later study of adult friends and family of child "senders" compared to a matched group of "strangers" to the child stimulus figures, no main effects for observer type were found, but an interaction of nonverbal mode with observer type did occur showing that friends and family did better in decoding vocal channels while strangers did better at decoding visual channels.

Buck (1975, 1977) has provided the most direct examination of the ability of preschool children to communicate their affective experience nonverbally to their parents. In the development of his basic paradigm, he showed adults ("senders") "emotionally-loaded" slides depicting sexual, scenic, pleasant people, unpleasant people, and unusual themes. He then asked observers ("receivers"), in decoding the visual presentations of the senders, to attempt to identify the kind of slide seen, and to rate how pleasant-unpleasant the sender was feeling in seeing each slide on the basis of nonverbal (visual) data alone. He found that significant communication occurred in this procedure; observers (receivers) could both successfully identify slides and the state of the sender on the pleasantness-unpleasantness dimension. Large individual differences were also found with female senders being accurately decoded more often than males.

In extending his paradigm to include research with mothers and their children, the lower accuracy in decoding males was investigated

with the hypothesis that nonverbal expression in males was inhibited more through socialization. Girls and boys from a nursery school population served as senders while their own mothers served as the primary group of receivers. Another comparison group of receivers consisted of male and female undergraduate students. Children were presented with four types of slides: familiar people, unfamiliar people, mildly unpleasant, and unusual (e.g., strange photographic effects). After viewing each slide, they were asked to rate their reactions on a happy-unhappy face scale. While the children viewed the slides, their mothers, observing only the children's facial expressions via closed-circuit TV, attempted to categorize accurately the type of slide seen and to rate the child's affective experience directly on the pleasantness-unpleasantness scale. At another session, the undergraduates were shown videotapes of the children viewing the slides and were asked to make the same ratings as the mothers.

Results obtained on the communication accuracy measures (the categorization measure and the correlated ratings of observers and children on the pleasantness measure) indicated that significant communication occurred both with mothers and undergraduates. Since Buck was primarily interested in childrens' encoding behavior, comparisons between mothers and undergraduates in decoding ability were not done. Marked individual differences were seen across sender-observer pairs. Children who were poor senders with mothers tended also to be poor senders with undergraduates. No significant sex differences in encoding ability were seen, although trends were reported in the direction

of greater communication accuracy for girls in encoding abiltiy and decreased accuracy for boys as age increased. These results were consistent with the hypothesis that sex differences in nonverbal expressiveness develop as a result of differential socialization practices.

Krauss and Morency (1979) used a slide-viewing paradigm similar to Buck's as well as a role-playing condition in studying the encoding and decoding of affect by children and parents. Parents (mothers and fathers) first observed videotapes of children (their own as well as other, unrelated, children) as the children watched a set of sixteen affect-inducing slides. Parents then rated each child on a five-point pleasantness scale. (The children had previsouly rated their reactions to the slides on a similar scale). Secondly, parents were shown videotapes of children role-playing reactions to five hypothetical affect-inducing situations (e.g., "Show me how you would like it if a friend came to visit and you were very happy."). Results of the first decoding task (called "spontaneous encoding") were minimal. Correlations between decoders' and childrens' ratings were significant for only one in five decoders. Parents were no better in decoding their own children than they were in decoding other children. Krauss and Morency attribute their minimal findings to the restrictions on the range of eliciting stimuli as well as their relatively small sample size. Results of the second, role-played, decoding task (called "communicative expressiveness") were very different from the first. Parents decoded children at levels significantly better than chance. In addition, parents were found to be better at identifying the expressions of their own

children than those of strange children. Finally, Krauss and Morency found no differences related to age or sex of encoder.

Results of the Krauss and Morency study are somewhat limited from the point of view of the present research. The measure employed for the spontaneous encoding task was limited to correlated ratings of child and parent responses on a global pleasantness dimension. Perhaps a categorization-type measure would have produced different results. Secondly, although the role-played encoding task presumably used five situations calling for five specific affects to be role-played, results were not reported by specific affect. The possibility of differences between parents and non-parents in decoding ability was not explored within the scope of the research. Finally, although no sex or age differences were found, Krauss and Morency caution that their age range was restricted to less than one year and their sample size was small.

Summary. In general, results of these studies indicate that it is possible to investigate directly the ability of parents and children to communicate nonverbally in a relatively controlled and uncomplicated laboratory procedure. Comparisons of parents and non-parents on the PONS indicate some advantage for parents over non-parents in decoding young childrens' expressions. However, when the children are their own, this advantage is not as clear (parents are only better at decoding one channel), contrary to what might reasonably be expected considering that parents have a wealth of data about their own children to draw on that non-relatives do not. The studies by Buck (1975, 1977) and Krauss and Morency (1979), despite being the most direct in exam-

ining sender-receiver accuracy in judging affective experience, do not look at potential differences between parents and non-parents in decoding ability. Buck finds significant decoding effects for both groups but emphasizes the unique importance of characteristics of the sender in determining communication accuracy. In addition, the findings with regards to sex differences are minimal but may be suggestive of developmental trends as differences are often seen in adults (Buck, 1975, 1977).

In considering the types of affective judgments to be made by observers (receivers) in the research presented, it seems that subjects have not been asked to make judgments differentiating specific affects (e.g., happy, sad). The question of differential decoding accuracy of specific affects by different groups of observers (parents vs. non-parents) has yet to be examined. Since parents might often be called upon to help their children in understanding and coping with different specific feelings, as well as to be empathic, this question seems quite worthy of examination.

The Present Study

The present study investigated mother-child nonverbal communication accuracy by looking at mothers' ability to "read" the nonverbal presentation of four specific affects (happiness, sadness, fear, and anger) in their own children under conditions in which the affects were encoded spontaneously as well as by role-playing. In addition, a more global measure of parental ability to assess the child's affective

state on a pleasantness-unpleasantness dimension was obtained in the spontaneous encoding phase of the study.

In the spontaneous encoding phase, it was expected that the ability of mothers to recognize, and rate the experience of, specific affects from their childrens' nonverbal behavior could be assessed by a viewing paradigm similar to that used by Buck (1975, 1977). In this technique the children were shown slides and heard accompanying stories about children their own age designed to induce empathic responses to child characters experiencing situations in which they were made to feel happy, sad, afraid, and angry. Mother-child scores of communication accuracy were compared to corresponding scores for children and female adults who were not their mothers.

Hypotheses. The primary hypothesis to be investigated was:

1. That significant communication accuracy would be obtained for child-mother pairs and that this accuracy would be greater than that obtained for child-non-mother pairs.

In addition, two secondary hypotheses were examined:

2. Sex differences in encoding ability would be found, with females expected to be decoded more accurately than males.

3. There would be differential communication of affect with positive affect (happiness) expected to be communicated best.

C H A P T E R I I

METHOD

Subjects

Twenty-four children (twelve male, twelve female) and their mothers were recruited by letter from local nursery schools and kindergartens (see Appendix A). Ages of the children ranged from 3 years, 11 months to 6 years, 6 months. Children served as "senders" of nonverbal communication of affect, while mothers served as the primary "receivers," attempting to decode the child's nonverbal affect message. Twenty-four women, who were not parents, were matched with the childrens' mothers and served as non-parent "receivers." The women were matched on the basis of age (within five years) and racial background. Demographic data on the children and matched pairs of adult subjects are given in Appendix B. The socioeconomic background of the sample was, for the most part, upper middle-class as determined by the Two-Factor Index of Social Position (Hollingshead, 1957).

General Procedure

The procedure used in this study to measure the nonverbal communication of affect is based upon the sender-receiver paradigm described in Buck (1975, 1977). Two encoding conditions were employed in this study: spontaneous encoding and role-played encoding.

In the spontaneous encoding condition, a task originally devised

as a measure of empathy by Feshbach and Roe (1968) was used as an affect induction. The children, serving as "senders," watched a series of slides that corresponded to a set of narratives recorded on tape and played for them by a female experimenter. The children heard and saw four types of narrative-slide sequences. The sequences were designed to elicit an empathic response to characters who were described as experiencing one of four affective states: happiness, sadness, fear, and anger. For each narrative-slide sequence, the children were asked to identify the affect, and also to rate their reaction to the sequence on a pleasant-unpleasant dimension. Following the procedures outlined in Buck (1975, 1977), the child's spontaneous facial expressions were televised to a "receiver" (the mother, and later, via videotape, the matched non-parent receiver). The receiver was first asked to attempt to identify the specific type of narrative-slide sequence shown, and second, to rate how the child was feeling on a pleasant-unpleasant dimension in response to each narrative-slide sequence. In this manner, two measures of nonverbal communication of affect accuracy were obtained: a categorization measure (percent correct for narrative-slide sequences shown), and a pleasantness measure (a difference score for sender's and observer's rating of pleasantness of sender's emotional experience in response to sequences).

In the role-played encoding condition, the children were asked to use facial expressions to show how they would feel if they were the central character in four of the narratives they had just heard (one each for happiness, sadness, anger, and fear). As before, the child's

facial expressions were then televised to the mother (and later, via videotape, the matched non-parent observer). Observers were asked to judge which of the four affects the children were role-playing. Only the categorization measure was obtained for the role-played encoding condition.

Materials

The sequences of affective situations used in the spontaneous encoding phase were developed from Feshbach's empathy measure. Each sequence consisted of three slides describing a scenario and there were two scenarios for each of the four affects of happiness, sadness, fear, and anger. The slides were simply drawn in a black and white comic strip style. The slides were drawn so as to limit extraneous stimuli and provide direct facial cues as to the affect experienced by the characters. Two sets of scenarios were prepared: one with male characters and the other with females. The two sets were identical in all other aspects. Male subjects were shown male characters, while females saw female characters.

The specific scenarios for each of the four affects were: happiness-birthday party, winning a television contest; sadness-a lost dog, social rejection; fear-a lost child, a frightening dog; anger-a toy snatcher, a false accusation. The narratives associated with each slide sequence were matched for number of words used to describe the situation over all four affects. Verbal labels of affective state were not included in the narrative material. An example of the narratives (one of the male, sadness sequences) is given below:

Slide I. Here is a boy and his dog. This boy goes everywhere with his dog, but sometimes the dog tries to run away.

Slide II. Here the dog is running away again.

Slide III. This time the boy cannot find him, and it looks like he may be gone and lost forever.

Procedure

Senders. Each child was taken to the experimental room by an experimenter. Following the procedure described by Feshbach, prior to entering the room, the children were told that they were to see slides and hear stories about other children their age. They were seated at a table on which was placed a slide projector and the children were then reminded of what they had been told. They were then shown the slide sequences paired with narrative material played for them on tape. After each sequence, the child was asked how he or she felt. The specific instructions, again according to Feshbach, were "how do you feel?" and "tell me how you feel." The children also were asked to describe how the child in the story felt if it appeared that he or she did not understand the question. The child's response was recorded and used as a check of congruity between affective sequences shown and the child's description of his or her experience. In addition, after each sequence, the child was asked to rate how good or bad he or she felt in response to the sequence by the use of a rating scale devised by Buck (1975) (see Figure 1). The rating scale consisted of drawings of five faces, from "very good" (very happy) to "very bad" (very unhappy). The

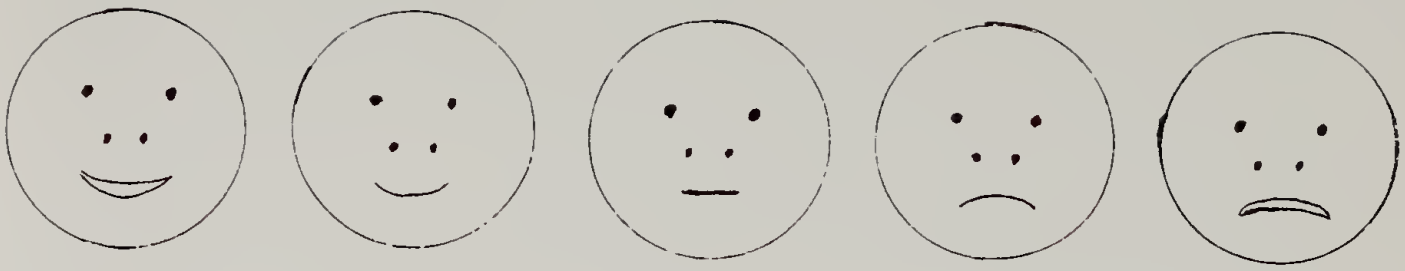

Fig. 1. Scale used by the child to rate his/her emotional experience.

child was given the following instructions (modified from Buck, 1975, p. 646):

> Now tell me what you thought of these stories and pictures by pointing to one of these faces. If the pictures and stories made you feel really good, very good, point to this smiling face (demonstrated). If you really didn't feel good at all, if they made you feel real bad, point to this face (demonstrated). If you felt a little good or a little bad, point to one of these faces (demonstrated). If you didn't feel anything one way or the other, point to this face (demonstrated).

Each individual trial thus proceeded as follows: The child saw a sequence of three slides paired with three narrative statements. At the conclusion of the sequence the slides were turned off and the child was asked how he or she felt and the responses were recorded. The rating scale of facial drawings was then shown and the child was asked to indicate the appropriate face. His or her response was noted. Throughout the trial, the experimenter kept looking at the slide pro-

jector screen to help the child to focus attention on the slides and narratives.

The two sequences for each of the particular affects were presented together so as to increase the impact of the affective content. Order of presentation of the affective sequences, however, was randomized across subjects. A brief filler task consisting of sorting small objects by color and size, lasting approximately two minutes (similar to the time of administration of each affective category) was used between presentations of affective categories to minimize carryover from one affect to the next. A total of eight affective sequences was presented to each child.

While viewing the slides, subjects were secretly videotaped via hidden camera.

Following presentation of all affective sequences, the experimenter set aside the slide projector and asked the children to role-play each of the four affects by imagining that they were the central character in four of the narratives they had just heard (one for each of the affects happiness, sadness, fear, and anger). An example of the specific instructions used was:

> I want you to show me what your face looks like when you feel different ways. Pretend you were at your birthday party and you were feeling really happy and glad. Show me what your face looks like when you're happy and glad.

Again, the childrens' expressions were secretly videotaped via hidden camera.

Receivers. While the child was taken to one experimental room, the

mother was taken to another room accompanied by an experimenter. (The two rooms were separated in such a way that the mother was not able to hear any sound coming from the child's room.) The mothers were seated facing a TV monitor. They were given prepared rating forms (see Appendix C) on which to indicate their judgments of affective sequences viewed by the child and to rate the child's experience on the pleasantness-unpleasantness scale. The experimenter gave the following instructions (adapted from Buck, 1975, p. 646):

> (Name) will be looking at a series of eight slide sequences and listening to stories accompanying them. There are four kinds of sequences (pointing to the form): stories and slides about children who feel happy, children who feel sad, children who feel afraid, and children who feel angry. For each of these sequences, I'd like you to watch (name's) face on TV and try to guess what kind of sequence he/she is watching just by watching his/her facial expressions. You won't be able to hear the stories because the sound will be turned off. I'd also like you to try to rate how pleasant or unpleasant you think each slide sequence made him/her feel by putting a mark in one of these boxes (pointing). Do you have any questions?

Questions were answered and the mother was then shown what she was to see on her TV screen as the experiment proceeded. The experimenter then said:

> I'll turn on the TV just before the slide sequence is shown to (name). You'll see (name) just before the slide sequence is shown and see his/her initial reactions as the sequence proceeds. The experimenter in the room with (name) will ask him/her a few questions about the slides and stories as the slide sequence ends. I'll turn off the TV after each sequence of slides is turned off, so your screen will go blank. At that point, make your ratings about what kind of slide sequence you think (name) saw and how pleasant or unpleasant you think his/her reaction was. Do you have any questions?

Questions were again answered and if the task was understood, the experiment proceeded as described above.

At the conclusion of all the affective sequences, the mother was told that her child was going to be using facial expressions to role-play different emotions and that she would view each of the role-plays on the TV monitor. She was given a prepared rating form (see Appendix D) prior to each televised segment and asked to indicate which of the affects (happiness, sadness, anger, or fear) was being role-played in each segment.

After the role-playing was completed, the child was brought to the mother's room, the experiment was explained to both, and the child was shown some of his/her reactions on videotape.

Non-parental receivers. Non-parental receivers were scheduled separately from the mothers. Each of the matched non-parental receivers was taken to the same experimental room by the same experimenter and shown a videotape of the stimulus child's performance in the spontaneous encoding and role-played encoding conditions. They were given the same type of rating form used by, and instructions used with, the mothers.

Following presentation of the entire videotape, they were debriefed and questions about the research were answered.

C H A P T E R I I I

RESULTS

Nonverbal communication of affect was investigated in two phases. Separate analyses were conducted for the role-played and spontaneous encoding phases of the study.

Spontaneous Encoding

In the spontaneous encoding phase, children viewed four sets of slides, and listened to accompanying stories, about other children in situations in which they experienced four kinds of affect; happiness, sadness, fear, and anger. As the children viewed the slides, observers (mothers of the children and a group of women unrelated and unknown to the children) were asked to make judgments about their nonverbal expressions of affect. Two measures of communication accuracy were obtained: a categorization measure (percent correct for affective sequences observed), and a pleasantness measure (difference scores and correlations for senders' and observers' ratings of pleasantness of senders' emotional responses to affective sequences).

Categorization measure. For sender-observer pairs, the percentage of correct judgments in each of the four affective categories was determined. Percentage correct scores were then transformed using the arc sine transformation to obtain homogeneity of variance and allow an analysis of variance (Myers, 1972). (For purposes of clarity, however,

the results reported below will be in terms of raw score.) Subsequently, a 2 (mothers vs. non-mothers) X 2 (sex of encoder) X 4 (type of affect) analysis of variance was employed with the first two variables as between subjects factors and the latter variable as the within subjects factor. Where the analysis showed a significant variation among group means, post hoc comparisons using the Duncan New Multiple Range Test (Duncan, 1955) were employed to determine which means were found to vary significantly from each other and from chance performance.

The results of the analysis of variance are displayed in Table 1. A significant main effect for type of affect was found, $\underline{F}(3,132) = 10.60$, $\underline{p} < .0001$. In addition, two interactions were significant: type of affect X type of observer, $\underline{F}\ (3,132) = 3.94$, $\underline{p} < .01$, and type of affect X sex of encoder, $\underline{F}\ (3,132) = 2.95$, $\underline{p} < .05$. No other main effects nor interactions were found to be significant.

The significant main effect for type of affect gives direct support for Hypothesis 3, in that certain affective categories were more easily decoded than others. Mean accuracy scores for each of the four affective categories are displayed in Table 2. Happiness was successfully decoded best (50 percent), followed by sadness (37 percent) and fear (35 percent), with anger being decoded least accurately (16 percent). Post hoc comparisons showed that happiness was decoded at levels significantly better than what would be expected by chance (an observer should identify 25 percent of affective sequences correctly by chance alone) and better than any of the other three affects, $\underline{p} < .05$. Anger was decoded significantly lower than any of the other three

TABLE 1

Analysis of Variance for Categorization Measure
of Spontaneous Encoding of Affect

Source	df	MS	F
Between S			
Type of Observer (A)	1	168.75	0.18
Sex of Encoder (B)	1	0.00	0.00
A X B	1	168.75	0.18
Error	44	924.29	
Within S			
Type of Affect (C)	3	7790.63	10.60*
C X A	3	2896.88	3.94**
C X B	3	2165.63	2.95***
C X A X B	3	1378.13	1.88
Error	132	735.10	

* $p < .0001$
** $p < .01$
*** $p < .05$

TABLE 2

Percent Correct for Decoding Affective Categories:
Spontaneous Encoding

Happiness	$.50_a$
Sadness	$.37_b$
Fear	$.35_b$
Anger	$.16_c$

(Similar subscripts indicate insignificant differences among means.)

affects and significantly worse than chance, $p < .01$.

The errors made in decoding affective categories were examined to see if observers were systematically confusing one affect with another. Table 3 presents the errors made in decoding affective categories. Chi-squares were calculated for each of the affective categories to determine the significance of the observed versus expected frequency of types of errors. Only the anger category was found to produce a significant chi-square, χ^2 (2) = 7.18, $p < .05$. In failing to accurately decode anger, observers most often (47 percent) confused anger with sadness.

The significant interaction between type of affect and type of observer gave partial confirmation for Hypothesis 1, in which it was suggested that significant communication accuracy would be obtained for child-mother pairs and that this accuracy would be greater than for child-non-mother pairs. Table 4 presents the means for mothers and non-mothers decoding of affective categories. Examination of the mean accuracy scores showed that, for mothers, happiness was accurately decoded best (56 percent) followed by sadness (44 percent) and fear (38 percent), with anger being decoded least accurately (4 percent). Post hoc comparisons showed that mothers' decoding of happiness was significantly better than chance ($p < .05$), but decoding of anger by mothers was significantly worse than chance ($p < .01$). In addition, only happiness and sadness, and sadness and fear were not significantly differentiated from each other by mothers. Again, an examination of decoding errors (see Table 5) showed that only the anger category pro-

TABLE 3

Errors Made by All Observers in Decoding Affect:
Spontaneous Encoding

	Errors in Decoding (%)			
Correct Category	Happiness	Sadness	Anger	Fear
Happiness	--	38	19	43
Sadness	28	--	28	44
Anger	23	47	--	30
Fear	37	40	23	--

TABLE 4

Mean Accuracy Scores for Mothers and Non-Mothers
Decoding of Affective Categories: Spontaneous Encoding

	Mothers	Non-Mothers
Happiness	$.56_{a}$	$.44_{a}$
Sadness	$.44_{a,b}$	$.29_{a}$
Fear	$.38_{b}$	$.33_{a}$
Anger	$.04_{c}$	$.27_{a}$

(Within observer group, similar subscripts indicate insignificant differences among means.)

TABLE 5

Errors Made by Mothers in Decoding Affective Categories: Spontaneous Encoding

	Errors in Decoding (%)			
Correct Category	Happiness	Sadness	Anger	Fear
Happiness	--	38	24	38
Sadness	22	--	30	48
Anger	24	52	--	24
Fear	40	37	23	--

duced error rates significantly different from chance expectation, χ^2 (2) = 7.34, $p < .05$. Also again, most of the errors in decoding anger were made in attributing sadness. The decoding of affects by non-mothers was not better than chance for any affective category nor was the differential decoding of affect by non-mothers significant for any affects. However, non-mothers' decoding of anger, though not greater than chance expectation, was significantly better than mothers' decoding of anger ($p < .05$). Apparently, mothers are both more sensitive at decoding positive affect (happiness) in their own children and less sensitive at decoding anger.

With respect to Hypothesis 2, the significant interaction between type of affect and sex of encoder gave support to the prediction of differences based on sex of encoder, but the pattern of these differences was unexpected. Table 6 presents the mean accuracy scores involved in the interaction. When male children were encoding, observers successfully decoded happiness best (52 percent), followed by sadness (44 percent) and fear (25 percent), with anger being decoded least accurately (17 percent). Post hoc comparisons showed that happiness was decoded significantly better than chance ($p < .01$). The decoding of no other affects differed significantly from chance expectation.

The mean accuracy scores for female encoding (Table 6) show that happiness was decoded best (48 percent), followed by fear (46 percent) and sadness (29 percent), with anger being decoded least accurately (15 percent). Post hoc comparisons showed that anger was decoded significantly worse than chance ($p < .05$) when female children were en-

TABLE 6

Mean Accuracy Scores for Sex of Encoder Effects on Decoding of Affective Categories: Spontaneous Encoding

	Male	Female
Happiness	$.52_{a}$	$.48_{a}$
Sadness	$.44_{a}$	$.29_{b,c}$
Fear	$.25_{b}$	$.46_{a,c}$
Anger	$.17_{b}$	$.15_{b}$

(Within sex, similar subscripts indicate insignificant differences among means.)

coding. No other affects differed significantly from chance. Once again, only the anger category produced a significant chi-square, χ^2 (2) = 7.67, $\underline{p} < .05$, with most of the errors in failing to accurately decode anger made in attributing sadness (see Table 7).

The results obtained with the categorization measure for spontaneous encoding thus indicate that, as predicted, there is a difference in accurately decoding nonverbal expressions of affect when different affects are involved. Happiness was the only affect decoded significantly better than chance, while anger was decoded at levels significantly worse than chance. While mothers, as a group, were not uniformly better than non-mothers in decoding their childrens' nonverbal expressions of affect, the pattern of decoding accuracy was different for mothers compared to non-mothers. Mothers were found to be significantly more accurate in decoding happiness but significantly less accurate in decoding anger, while non-mothers were not able to accurately decode any affect at better than chance levels. Sex of encoder also seems to affect observers' accuracy but in a somewhat unexpected manner. Male encoders are decoded better than females when encoding the only affect decoded significantly better than chance; happiness. Female encoders, however, appear to be decoded significantly worse than chance when encoding anger and, then, are likely to be seen as sad.

Pleasantness measure. The pleasantness measure was employed as a second, more global, means of looking at communication accuracy, in which observers were asked to assess the child's general feeling state on a pleasant-unpleasant dimension. The children rated each affective

TABLE 7

Errors Made by Observers in Decoding Affective Categories With Female Children Encoding: Spontaneous Encoding

	Errors in Decoding (%)			
Correct Category	Happiness	Sadness	Anger	Fear
Happiness	--	40	12	48
Sadness	29	--	24	47
Anger	24	54	--	22
Fear	35	42	23	--

sequence on a five-point scale by indicating which of the faces in Figure 1 corresponded with their reactions to the sequence. A rating of 1 indicated that the sequence made them feel very good, and a rating of 5 indicated that the sequence made them feel very bad. The mean ratings indicated that the happiness sequences were seen as the most pleasant (M = 1.52) while the sadness sequences were seen as the most unpleasant (M = 3.21). Mean ratings of the anger and fear sequences were 2.81 and 2.98 respectively. A one-way analysis of variance was used to test the significance of differences between mean ratings of the four types of sequences (see Table 8). Results of the analysis revealed that the means for type of affect differed significantly, F (3,188) = 14.48, $p < .001$. Post hoc comparisons showed that the mean rating of happiness sequences was significantly different from the means for the other three types of affective sequences but that no other differences between means was significant ($p < .01$). The pattern of ratings suggested that, while the happiness sequences were experienced positively by the children, the sequences for sadness, anger, and fear were experienced as more negative. In addition, this pattern suggested that the children were able to use the rating scale as intended and that their ratings of their experiences in reaction to the affective sequences were appropriate and as expected.

While the child rated his or her experience of the affective sequences, the observers were asked to make a similar rating of the child's experience. A difference score was calculated between the child's rating and the observer's rating. The child's score on the

TABLE 8

Analysis of Variance for Children's Ratings of Affective Sequences on Pleasantness Scale

Source	df	MS	F
Type of Affect	3	27.52	14.48*
Error	188	1.90	

*$p < .001$

five-point rating scale was subtracted from the observer's score and the absolute value was taken so that a difference of four indicated maximum inaccuracy. Thus, the lower the score, the less the discrepancy. The differences for each affect and for each child-observer pairing were then summed.

Two types of analyses were employed. First, a 2 (mothers vs. non-mothers) X 2 (sex of encoder) X 4 (type of affect) analysis of variance was conducted (see Table 9). Results of this analysis revealed only one significant finding, for type of affect, $\underline{F}$ (3,132) = 3.26, $\underline{p} < .05$. Discrepancy between childrens' and observers' ratings of childrens' affective experience therefore did vary significantly with type of affect. Mean difference scores are presented in Table 10. Sadness sequences were found to elicit least discrepancy (M = 2.52) followed by anger and fear (each M = 2.85). Surprisingly, happiness was found to elicit the greatest discrepancy between childrens' and observers' ratings (M = 3.38) with childrens' ratings being more positive than observers' ratings. Post hoc comparisons showed that the means for happiness and sadness differed significantly from each other but not from the other two affects ($\underline{p} < .01$). Observers thus would seem to have the most difficulty in judging the pleasantness of the child's experience on the very affect they are best at categorizing.

In an attempt to further elucidate the findings on this measure, Pearson product-moment correlations were calculated for childrens' ratings and observers' ratings within affect. The ratings of happiness sequences were negatively correlated, but the correlation failed to

TABLE 9

Analysis of Variance for Pleasantness Measure of Spontaneous Encoding of Affect

Source	df	MS	F
Between S			
Type of Observer (A)	1	2.76	.89
Sex of Encoder (B)	1	9.63	3.12
A X B	1	8.76	2.84
Error	44	3.09	
Within S			
Type of Affect (C)	3	5.98	3.26*
C X A	3	2.08	1.13
C X B	3	1.67	.91
C X A X B	3	2.41	1.31
Error	132	1.83	

*$p < .05$

TABLE 10

Mean Difference Scores by Type of Affect:
Pleasantness Measure

Happiness	3.38_{a}
Anger	$2.85_{a,b}$
Fear	$2.85_{a,b}$
Sadness	2.52_{b}

(Similar subscripts indicate insignificant differences among means.)

reach significance ($r = -.25$). Small positive correlations were found for the other three affects, but none approached significance. These results were consistent with the difference score findings.

Role-Played Encoding

In the role-played encoding phase of the study, the children were asked to use facial expressions to show how they would feel in each of four affect-inducing situations. The situations described to the children were those described in the first story of each of the affective categories (happiness, sadness, anger, and fear) for which they had seen slides earlier. Observers (the same mothers and non-parent women who had rated the child previously) were asked to make judgments about which affect the child was role-playing. The percentage of correct judgments in each affective category was determined and a separate 2(mothers vs. non-mothers) X 2 (sex of encoder) X 4 (type of affect) analysis of variance was conducted (see Table 11). (The arc sine transformation was used again to convert the percentage scores for analysis.)

Results of the analysis revealed no significant main effect for type of observer or sex of encoder. The interaction of type of observer and sex of encoder and the two and three way interactions with type of affect were also non-significant. However, once again, a significant main effect for type of affect was found, F (3,120) = 7.23, $p < .0001$.

Mean accuracy scores for each of the four affective categories are

TABLE 11

Analysis of Variance for Role-Played Encoding of Affects

Source	df	MS	F
Between S			
Type of Observer (A)	1	1380.68	.56
Sex of Encoder (B)	1	7093.64	2.85
A X B	1	1380.68	.56
Error	40	2487.38	
Within S			
Type of Affect (C)	3	11671.36	7.23*
C X A	3	427.50	.27
C X B	3	503.18	.31
C X A X B	3	1409.32	.87
Error	120	1614.38	

*$p < .0001$

presented in Table 12. Happiness was decoded best (84 percent) followed by anger (57 percent) and sadness (52 percent). Fear was decoded least accurately (41 percent). Post hoc tests showed that happiness ($p < .01$) and anger ($p < .05$) were decoded at levels significantly better than chance. Sadness was decoded at levels approaching significance ($p < .06$). Only the decoding of fear failed to reach or approach significance in the role-playing condition. Happiness was differentially decoded better than all other affects ($p < .01$) with no significant differential decoding between anger and sadness, sadness and fear, and anger and fear.

The pattern of results obtained in role-playing was thus somewhat different from that obtained with spontaneous encoding. The ordering of means from greatest to least accuracy for spontaneous encoding was happiness, sadness, fear, and anger. For the role-playing condition the ordering was happiness, anger, sadness, and fear. Happiness was thus decoded significantly best in both parts of the study. However, anger, when spontaneously encoded, was accurately decoded least, and at levels much worse than chance. When role-played, anger was decoded significantly better than chance and second in order only to happiness. Sadness and fear were not decoded at levels significantly better than chance with spontaneous encoding. When role-played however, the decoding of sadness approached significance when compared to chance while the decoding of fear did not.

Role-Playing Compared to Spontaneous Encoding

Means were calculated for the overall decoding of affect in the

TABLE 12

Mean Accuracy Scores for Observers' Decoding of Role-Played Encoding

Happiness	$.84_a$
Anger	$.57_b$
Sadness	$.52_b$
Fear	$.41_b$

(Similar subscripts indicate insignificant differences among means.)

spontaneous and role-played encoding conditions of the study to determine if significant communication of affect occurred as a function of of each of these encoding techniques. The significance of each of the means compared to chance expectation was first tested using *t* tests. Both were found to be significant (role-playing, M = .59, t (175) = 6.98, $p < .0001$; spontaneous encoding, M = .34, t (191) = 3.05, $p < .01$). A *t* test was then used to determine if the role-playing mean was significantly higher than the spontaneous encoding mean. Results indicated that communication accuracy was indeed significantly higher with role-played encoding, t (366) = 3.60, $p < .001$.

C H A P T E R I V

DISCUSSION

Each of the three experimental hypotheses received at least partial confirmation from the data analysis. Differential communication of affects did occur, with happiness being communicated at levels far above chance and anger decoded at levels far below chance. This finding, however, is moderated by the more interesting findings with regard to the other two hypotheses. Parental status was indeed found to effect decoding ability in that the pattern of decoding accuracy was quite different for mothers compared to non-mothers. The decoding of affects by non-mothers was only minimally proficient with happiness being decoded best but still not significantly better than chance expectation. However, mothers were found to be quite accurate in decoding happiness but highly inaccurate in the decoding of anger. With regards to the prediction of differences in decoding accuracy due to sex of encoder, such differences were found but the pattern of decoder accuracy produced by male and female encoders was surprising. Male encoders were decoded very well for the affect happiness, but at levels no better than chance for all other affects. Female encoders were not decoded at better than chance levels for any affect. Instead, the only significant effect concerned their being greatly misread when encoding anger. The study also found that significant communication of affect occurred under both the spontaneous and role-played encoding conditions but that

role-played encoding produced far better levels of communication accuracy.

Each of the major findings will be discussed in more detail below.

Effects of Type of Affect

That happiness was found to be decoded best is not at all surprising given previous research (Buck, 1975, 1977; Odom and Lemond, 1972; Mayo and LaFrance, 1978). Expressions of delight, joy, and happiness are easily recognized by adults in young children and infants. These expressions would appear to be highly reinforced in our culture and the experience of seeing happy children is probably highly valued. The literature on childrens' acquisition of verbal labels of affect also suggests that children acquire the label for happiness quite early compared to other affects (Gilden, 1979).

The findings of no better than chance decoding for sadness, and fear, and much worse than chance decoding for anger, in the spontaneous encoding phase of the study might be explained in several ways. First, the affect induction task might have been especially poor in eliciting the encoding of these "negative" affects by the children. There are certainly limits as to the intensity of the affective experience to which experimental subjects can or should be exposed. It is also possible that, particularly for the anger sequences, stories intended to result in the encoding of anger may have in fact elicited the encoding of other specific affects, particularly sadness, or a more general expression of unpleasantness. The examination of decoding errors would

seem to lend some support to this explanation as most of the errors in decoding anger were made in attributing sadness. In reviewing the childrens' verbal responses to the stories, there is some tendency to report feeling "bad" in addition to angry in response to the anger stories. However, the finding that observers, in failing to accurately decode anger, saw the child as sad with a frequency greater than would be expected by chance might better be explained in the context of findings with regards to the relative decoding ability of mothers and non-mothers and sex of encoder (discussed below). For now, these findings suggest that characteristics of the decoders interfere with the successful decoding of these negative affects.

A more favored explanation for the findings of poor decoder accuracy with regards to sadness, fear, and anger, and which may have operated in addition to the above, involves the possible differential socialization of negative affects in the childrens' acquisition of display rules (Odom and Lemond, 1972). (Ekman and Friesen (1969) define display rules as socially learned prescribed procedures for managing affect displays in various social settings). In the role-playing condition, children were in a sense given "permission" to experience and express these socially undesirable affects. However, in the spontaneous encoding condition, the children may have been reluctant to acknowledge such negative feelings or identify with the story subject. Alternatively, it is possible that children of this age group have already learned that displaying these affects nonverbally is not encouraged by adults and thus they may have been inhibited

in the presence of the adult experimenter. This explanation is given some credence by the findings in the role-playing phase of the study. Here, the children were explicitly asked to act out how they would feel in four of the affective situations described to them previously. Under these conditions, the children were decoded with great accuracy for the affects happy and angry and moderate accuracy for the affect sad. Only fear was not decoded with accuracy significantly better than chance. These findings are consistent with previous research into children's production of facial expressions of emotion (Mayo and LaFrance, 1978) which suggests that happiness, sadness, and anger are capable of being reliably represented in the facial expressions of children, but that expressions of fear could not be reliably reproduced even by the oldest children studied.

Decoding by Mothers and Non-Mothers

The finding that the pattern of decoding accuracy in the spontaneous encoding condition of the study differed for mothers and non-mothers is of major interest in this research. Given that mothers have an intimate history with their children compared to non-mothers, it would seem reasonable that they would be more sensitive to, and therefore better decoders of, their children's nonverbal expressions of affect. Previous research either found somewhat ambiguous confirmation for this hypothesis (Hall, Rosenthal, et al., 1974) or, as in the case of Buck, did not directly examine possible differences in decoder ability (choosing instead to emphasize the importance of differences in the

characteristics of the encoding children). The results of the present study, in focusing on the decoding side of the encoding-decoding communication process, indicate that some interest in the characteristics of the decoder is quite warranted.

In the present research, differences in the pattern of decoder (mothers and non-mothers) accuracy occurred specific to particular types of affect. However, the pattern found was somewhat unexpected. Instead of mothers being more accurate decoders of both happiness and anger, it appears that they were especially accurate at decoding happiness in their children, while they were systematically unable to decode their childrens' nonverbal expressions of anger. (That the pattern of decoding accuracy for these particular affects, with happiness being decoded best and anger decoded at levels significantly worse than chance, is the same as the pattern found in the main effect for type of affect suggests that the source of the main effect is probably the contribution of the mothers' decoding pattern.) The possibility that the affective sequences used to elicit anger were not effective in producing encoded displays of anger in the spontaneous encoding condition might account somewhat for this result. However, were that the case alone, we would have expected mothers and non-mothers to be equally effected in failing to decode anger. While non-mothers' performance in the decoding of anger was not better than chance (non-mothers performance was not better than chance for any affect), it was significantly better than mothers' ability to decode anger. It would seem then, that for mothers, any difficulty in the childrens' encoding of

anger would only partially account for these results.

That happiness would be decoded with great accuracy, again, is not hard to understand. From a developmental perspective, happiness is probably one of the first expressions to be reliably encoded. As noted above, the experience of the decoder in observing expressions of happiness in children--particularly parents and their own children--is probably extremely positive and reinforcing.

The difficulty for mothers appears to be in the decoding of the affects considered "negative" or socially undesirably: sadness, fear, and especially anger. Perhaps this finding suggests that parents, because of their unique investment in, and identification with, the emotional satisfaction of their children, have difficulty in observing expressions of affect which would disconfirm such satisfaction. (If this were the case, it would be ironic that this difficulty in perceiving expressions of negative affect would probably only serve to decrease the emotional availability of parents to help their children deal with affective discomfort.) In fact, the finding of much worse than chance decoding of anger together with the data on the differential decoding of the four affects by mothers (that happiness and sadness, and sadness and fear were not differentially decoded from each other at significant levels) might suggest that observing expressions of happiness, sadness, and fear in one's own children does not disconfirm parental expectations and desires for child satisfaction as much as observing expressions of anger. Or, stated another way, observing expressions of anger in one's own children is dealt with in a different manner, possibly by

invoking parental defenses. In this case, an examination of the errors made in decoding anger by mothers might suggest that the emotion of sadness in one's children is somehow easier to deal with than is anger.

Two findings in the role-played encoding condition of the study are also interesting in aiding understanding of the mothers' decoding pattern in the spontaneous encoding condition. First, anger is decoded by all observers, including mothers, at levels above chance expectation. Apparently when told that their children will be "acting" angry, mothers are as able as non-mothers in decoding. This might suggest that the child's encoding of anger as a result of processes under the child's control creates less difficulty for parents. Secondly, in terms of the overall pattern of accuracy obtained for mothers and non-mothers it would seem that when encoding was somewhat exaggerated, as in the role-playing condition, mothers have no particular advantage or disadvantage. However, when encoding is more subtle, as in the spontaneous encoding condition, mothers are more skilled at decoding some affects but less able to decode others.

Finally, the findings with regard to the interaction of type of observer and type of affect suggest some understanding of the difficulties of previous research in finding differences in communication accuracy based on characteristics of the decoder. Hall, Rosenthal, et al., (1974) previously found differences in decoding accuracy for mothers compared to non-mothers according to the nonverbal channel used. Here we find such differences related to type of affect. Apparently, communication accuracy is at least partially dependent on characteristics

of the situation, as well as characteristics of the decoder. These particular characteristics need to be specified and studied before such differences may emerge.

Effects of Sex of Encoder

The pattern of decoding accuracy for the four affects studied also seems to be moderated in important ways by the sex of the encoding child. Previous research has been somewhat ambiguous about findings of differences in decoding accuracy associated with sex of encoder. Krauss and Morency (1979) found no such differences. Other research by Buck (1977) using a similar encoding-decoding paradigm with boys and girls ages four to six found only minimal sex differences, suggestive of a trend in which boys were poorer encoders than girls, especially with increased age. Buck hypothesized that the display rules for concealing expressions of affect applied more heavily for boys than for girls. However, in his spontaneous encoding paradigm, Buck did not examine the communication of specific affects.

The present research found a somewhat unexpected result, particularly for the girls studied. In the interaction of type of affect with sex of encoder, boys were decoded at levels above chance expectation for the only affect decoded at better than chance levels; happiness. It may be that, at least within the age range of four to six years for boys, the display rules governing nonverbal expression of affect do not require concealing expressions of happiness in spontaneous encoding situations. For girls in this age range, however, none

of the four affects studied were decoded at better than chance levels. (This is particularly surprising, since previous research in the nonverbal communication of affect had found either differences in expressiveness with females being more expressive than males, or no differences. In addition, women in our culture are generally assumed to be more emotionally expressive compared to men.) In fact, when girls were encoding, the affect of anger was actually decoded at levels much worse than chance expectation.

In contrast, results of the role-playing condition revealed no differences in communication accuracy due to sex of encoder. Anger in that phase of the study was decoded with accuracy better than chance expectation. Apparently, the problem does not lie in the inability of girls to produce facial expressions of anger.

The most likely explanation for these findings may involve viewing the meaning of the lowered decoding accuracy for anger in the context of the socialization of young girls in our culture. In reviewing literature on sex differences in the expression of emotion, Maccoby and Jacklin (1974) report several studies in which girls (in the age range of 2-5) were found to express anger in situations with a frequency far less than boys. In addition, they report other studies in which girls were found to respond to experimentally induced frustration with a greater frequency of crying than boys. (They note that it was not possible to tell if the greater frequency of crying was truly a response to frustration or a means of getting themselves out of the frustrating situation.) Their review also suggests that women, in situa-

tions in which anger might be an appropriate response, are somewhat slower to anger.

This literature may be understood to mean that expressions of anger for girls and women are more likely to be seen as inappropriate (either because they occur so infrequently compared to boys and men or because they are viewed as role-inappropriate). The lower decoding accuracy for anger in the current research for girls may thus reflect either the operation of socialized display rules inhibiting expressions of anger and negative affect, or the inability of decoders, who were themselves women, to recognize such expressions in young girls.

Pleasantness Measure

In attempting to make a global rating of the child's emotional experience in response to the affective sequences, observers produced results highly discrepant with findings from the analysis of the data obtained with the categorization measure. Difference scores obtained between the childrens' ratings of their affective experiences and the observers' ratings of the childrens' experiences showed the greatest discrepancy for the affect happy. The smallest discrepancy was found for the affect sad. Correlations calculated from child and observer ratings were consistent with this finding. This result is highly incongruous with results obtained on the categorization measure in spontaneous encoding and with results obtained from role-played encoding, where happiness was the affect identified with greatest accuracy. The possibility that observers could correctly categorize the happiness se-

quences while failing to even approach correctly rating the child's emotional experience when encoding happiness would be difficult to understand unless observers were to characteristically underestimate the pleasantness of childrens' experiences. A consideration of the manner in which the ratings were obtained produces a reasonable explanation.

The analysis of variance on the childrens' ratings of their experiences for each of the four affects indicated that they indeed rated their experiences appropriately on the five-point pleasantness scale. The mean rating for happiness was 1.52 while means for the other affects ranged from 2.81 for anger to 3.21 for sadness. However, means for the observers ratings ranged from 2.69 for happiness to 3.47 for sadness. It is apparent that the greatest differences would therefore be found for the happiness ratings. Ratings of the happiness sequences by observers, while clearly in the same direction as the children, were not as extreme. Ratings for the other affects by both observers and children were clustered about the center of the five-point scale. This suggests that observers, in making this kind of global rating of childrens' emotional experience, were not as able to accurately assess the child's experience as they were for the categorization task. Perhaps, deprived of the specific context within which to interpret the child's experience (the four discrete affective categories), and faced with the task of rating the child on a five-point scale, observers "played it safe" by indicating ratings as close to the neutral position as possible.

Although Buck (1975, 1977) has reported consistently good results with this measure of childrens' nonverbal expressiveness, Krauss and Morency (1979) have reported similar difficulties with this measure in a spontaneous encoding condition (although in their role-played encoding condition, the measure produced good results). They hypothesized that these difficulties result from necessary restrictions on the unpleasantness of the eliciting stimuli. However, their eliciting stimuli were of the same type as Buck's. The present results suggest that in addition to deficiencies in the range of eliciting stimuli, the measure itself may involve a task too difficult for subjects to manage successfully.

Role-Played Encoding

Role-playing as an encoding device was found to produce greater communication accuracy than spontaneous encoding. No differences were found for sex of encoder or type of observer. These findings are consistent with findings by Krauss and Morency (1979).

However, the finding of relative accuracy in the decoding of anger when role-played is inconsistent with Buck's (1975) finding that role-played anger was identified with least accuracy compared to other affects. Perhaps the source of the inconsistency lies in the differing methods of initiating the role-playing. Buck's procedure involved simply asking his subjects to show how they would feel if they were happy, sad, angry, etc. In the present research, child subjects were first reminded of a specific story situation (which they had already

heard) in which a child character was feeling happy, sad, etc. They were then asked to show how they would feel in that situation (happy, sad, etc.). Once again, perhaps supplying a context within which the subject can interpret his or her situation increases encoding accuracy.

Conclusion and Implications for Future Research

The current research has identified some potential stumbling blocks for adults in being empathic with children. This seems particularly to apply to mothers and their own children.

The major finding of this research gives some support to the hypothesis that the socialization process, in our culture, operates in such a way that the nonverbal expression of affects, particularly negative affects, is inhibited through the childrens' acquisition of display rules making the expression of these affects inappropriate. In addition, adults, and particularly mothers, while accurate in decoding expressions of positive affect, are not likely to interpret accurately expressions of negative affect with any consistency. A favored explanation consistent with these results is that negative affect in children, particularly anger, in some way invokes parental defenses causing them to misinterpret their children's nonverbal expressions of negative affect. But this does not hold for all negative affects: apparently, anger rather than sadness is more defended against.

If parental empathic responding involves the accurate perception of emotional experience of the child, and if such responding is necessary for the emotional well-being of children (and parents), then the

difficulties adults and parents have with respect to decoding negative affect can only hinder the child's ability to deal with emotional discomfort. Perhaps the current emphasis on "active listening" approaches in parent skills groups can be extended to include specific attention to accepting and recognizing nonverbal expressions of "negative" feeling.

If, however, as Buck suggests, characterisitcs of the encoder are more important than characteristics of decoders in determining communication accuracy, then it may be that some situational variable accounts for the differences in mothers' and non-mothers' decoding observed in this study. Perhaps the experimental situation increased mothers' anxiety about recognizing the child's expressions of affect. Non-mothers may not have been as susceptible to such performance anxiety since they might not have had any particular expectations for being able to recognize the expressions of children unknown to them. Further research is thus needed to replicate and clarify these findings.

Since the decoding of anger was particularly difficult when girls were encoding, the finding of maternal difficulty in decoding anger may also be theoretically interesting from the perspective of mother-daughter relationships. Chodorow (1978), in examining mother-daughter relationships, writes that overidentification is particularly characteristic of early relationships between mothers and daughters (and not mothers and sons). Mothers, in this line of reasoning, do not experience their daughters as emotionally separate from themselves in the way in which they see sons as separate. Daughters are more likely to

be seen as emotional extensions of the mother's self. In the context of the present study, decreased decoder accuracy for anger, that is the inability of mothers to recognize nonverbal expressions of anger in their daughters, would be consistent with Chodorow's hypothesis. Anger would be seen as more threatening to the identification process of mother and daughter in a way in which other affects were not. Although the present study does not directly support an explanation of these results based on the particular characteristics of the mother-daughter relationship, future research might further investigate this possibility.

In order to extend these findings and to adequately test the hypothesis with regard to mothers and daughters, future research should include fathers as well as mothers as parental decoders. In addition, a test of parents' abilities with their own as well as other children would be interesting in sorting out the effects of parental status per se on decoding ability. It is also possible that childrens' encoding and parents' decoding abilities are different in public and private situations. Future research on the decoding of specific affects might test this hypothesis.

While the current study suggests that examining nonverbal affective communication between parents and children is aided by attending to specific affects, the methodology may bear some improvement. Eliciting stimuli, particularly for the affect anger, may need to be developed so that ethical considerations for subjects are met while providing more unequivocal cues for encoders in spontaneous situations.

Perhaps videotapes of children experiencing affects in naturalistic settings would meet this requirement. Giving the decoders more information about the context in which the encoding takes place may also be beneficial (providing the stories used in the affective sequences, for instance).

Finally, more information is needed with regard to the manner in which display rules governing the expression of affect come to be acquired. A more careful analysis of age trends in the acquisition of display rules together with a consideration of how these rules come to be differentially applied to males and females may be informative with regard to their development in the socialization process.

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APPENDIX A

Text of Letter Used to Recruit Subjects

Dear Parent,

I'm writing to ask your help in a research project I'm conducting in the Psychology Department at the University of Massachusetts at Amherst. This project should increase our understanding of the way in which children communicate how they feel to their parents and other adults by looking at how children communicate emotions nonverbally.

Mother's and their 4-6 year old children are being asked to participate in this study. If you agree to participate, an appointment will be made, at your convenience, for you and your child to come to the University for one session lasting approximately 45 minutes. During this session, your child will hear stories and see a set of slides relating to the stories. You will be asked to guess the nature of the situation described in the stories and slides by looking only at your child's nonverbal expressions.

I will be able to provide you with a small honorarium of three dollars to help offset your transportation costs and in appreciation of your time and participation.

If you are interested, please contact me at (phone number) so that we may set up an appointment.

Thank you for your help.

Sincerely,

Joel Feinman

APPENDIX B

Demographic Data on Subject Children and Matched Pairs of Receivers

Pair	Sex of Child	Age of Child	Age of Adult	Race	SES	Education/ Occupation	Religion	Marital Status
1	female	3-11						
m:			32	Caucasian	II	MS/Speech Therapist	Jewish	Married
n:			28	Caucasian	III	BA/College Student	Unaffiliated	Single
2	female	5-9						
m:			27	Caucasian	IV	3 years college/ College Student	Catholic	Married
n:			24	Caucasian	III	3 years college/ College Student	Catholic	Married
3	male	6-6						
m:			39	Caucasian	II	M.Ed./Housewife	Catholic	Married
n:			35	Caucasian	II	M.Ed./Graduate Student	Catholic	Single
4	male	5-6						
m:			35	Caucasian	II	3 years college/ Student Teacher	Quaker	Married
n:			32	Caucasian	IV	3 years college/ College Student	Catholic	Single
5	male	6-0						
m:			36	Caucasian	II	MS/Librarian	Unaffiliated	Married

m = mother n = non-mother

APPENDIX B (CONTINUED)

Pair	Sex of Child	Age of Child	Age of Adult	Race	SES	Education/ Occupation	Religion	Marital Status
5								
n:			31	Caucasian	II	MA/Counselor	Catholic	Divorced
6	male	4-0						
m:			36	Caucasian	II	MA/Editor	Unaffiliated	Married
n:			33	Caucasian	II	MA/Teacher	Protestant	Single
7	male	5-0						
m:			23	Black	IV	2 years college/ College Student	Protestant	Divorced
n:			26	Black	III	MS/Graduate Student	Catholic	Married
8	female	4-6						
m:			37	Caucasian	II	MA/Journalist	Catholic	Married
n:			32	Caucasian	III	3 years college/ Clerical	Catholic	Single
9	male	5-10						
m:			33	Caucasian	II	MA/Housewife	Quaker	Married
n:			28	Caucasian	III	2 years college/ Mental Health Technician	Protestant	Single
10	female	4-1						
m:			36	Caucasian	II	MA/Housewife	Jewish	Married
n:			31	Caucasian	III	2 years college/	Protestant	Married

APPENDIX B (CONTINUED)

Pair	Sex of Child	Age of Child	Age of Adult	Race	SES	Education/ Occupation	Religion	Marital Status
10 (continued)						Secretary		
11	female	4-5						
m:			29	Caucasian	II	BA/Housewife	Protestant	Married
n:			26	Caucasian	II	MA/Counselor	Protestant	Single
12	male	5-6						
m:			34	Caucasian	II	BA/Unemployed Singer	Catholic	Married
n:			29	Caucasian	II	MA/Counselor	Protestant	Single
13	male	5-9						
m:			28	Caucasian	III	MA/Graduate Student	Jewish	Married
n:			24	Caucasian	III	3 years college/ College Student	Catholic	Divorced
14	female	4-7						
m:			32	Caucasian	II	High School/ Clerical	Jewish	Married
n:			27	Caucasian	III	BA/Secretary	Catholic	Married
15	male	4-10						
m:			38	Caucasian	II	BA/High School Teacher	Catholic	Married
n:			36	Caucasian	II	Ph.D./University Administrator	Protestant	Single

APPENDIX B (CONTINUED)

Pair	Sex of Child	Age of Child	Age of Adult	Race	SES	Education/ Occupation	Religion	Marital Status
16	female	4-10						
m:			33	Caucasian	II	MSW/Social Worker	Protestant	Married
n:			29	Caucasian	III	3 years college/ Research Asst.	Catholic	Single
17	female	4-3						
m:			27	Caucasian	III	3 years college/ Part-Time Teacher	Catholic	Divorced
n:			26	Caucasian	III	BA/Teacher	Protestant	Single
18	female	5-0						
m:			36	Caucasian	II	MA/Architectural Historian	Protestant	Married
n:			35	Caucasian	II	Ph.D./University Administrator	Catholic	Separated
19	female	4-5						
m:			31	Caucasian	II	Ph.D./Special Education Administrator	Jewish	Married
n:			28	Caucasian	III	BA/Graduate Student	Catholic	Single
20	male	4-0						
m:			30	Caucasian	II	BA/Nurse	Protestant	Married
n:			25	Caucasian	IV	BA/Waitress	Catholic	Single

APPENDIX B (CONTINUED)

Pair	Sex of Child	Age of Child	Age of Adult	Race	SES	Education/ Occupation	Religion	Marital Status
21	male	4-10						
m:			36	Caucasian	II	Ph.D./Biologist	Unaffiliated	Married
n:			31	Caucasian	II	MA/College Teacher	Unaffiliated	Married
22	female	5-0						
m:			32	Caucasian	II	MA/Teacher	Protestant	Married
n:			28	Caucasian	III	BA/University Administrator	Catholic	Single
23	female	6-3						
m:			31	Caucasian	III	BS/Housewife	Catholic	Married
n:			29	Caucasian	III	MA/College Administrator	Catholic	Married
24	male	4-11						
m:			32	Caucasian	II	4 years college/ Part-Time Secretary	Protestant	Married
n:			33	Caucasian	II	Ph.D./College Professor	Unaffiliated	Single

APPENDIX B (CONTINUED)

Mean Ages:	Children
Male	5.3
Female	4.8

Mean Ages:	Adults
Mothers	32.6
Non-Mothers	29.4
Mean difference	3.5

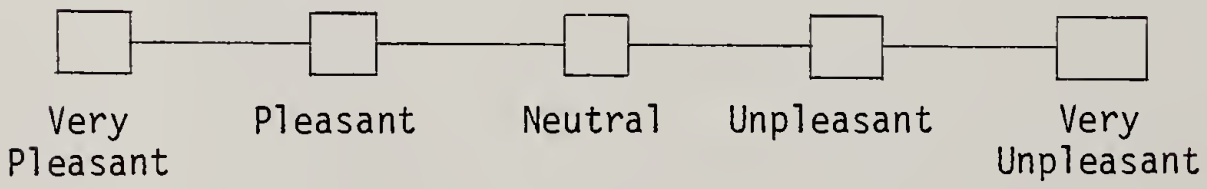
Socioeconomic Status (%)

	Mothers	Non-Mothers	Total Sample
I	0	0	0
II	79	38	58
III	13	54	33
IV	8	8	8
V	0	0	0

APPENDIX C

Rating Form Used By Observers in Spontaneous Encoding Condition

Happiness	Fear	Anger	Sadness



APPENDIX D

Rating Form Used by Observers in Role-Playing Condition

Happiness	Fear	Anger	Sadness